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Nurse Sensitive Indicators and How COVID-19 Influenced Practice Change



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Hospitals and health systems have only now started to realize the impact of the COVID-19 pandemic on the quality of nursing care. This analysis outlines the effects of the pandemic on nurse sensitive indicators (NSI) as described by chief nursing officers from across the nation. Demographic data concerning staffing and NSIs, including performance and surveillance during COVID-19, were collected to gain a national perspective on the collective experience of chief nursing executives. Shared solutions and lessons learned through the pandemic were captured during round-table discussions with 272 executives.

The COVID-19 pandemic has served as the ultimate disruptor in health care delivery, with the full impact only to unfold over time. Now, as the most recent surge subsides, we can look back on our practice and evaluate the quality of care and gain a better understanding of COVID-19's impact on nurse sensitive indicators (NSI). Necessary decisions to defer standard reporting and disruptive innovations in practice to ensure patient and staff safety may have created a distorted and incomplete quality of care picture.^{1,2} The complexities of maintaining regular quality reporting such as NSI coupled with unprecedented urgency to preserve life caused us to suspend reporting and face COVID-19 head-on. Now, as we reset our organizational and nursing practice, chief nursing officers recognize the need to enhance efforts to share outcomes, innovations, and strategies in real time to improve the quality of care delivery.

Given the delays in standard reporting of crucial safety measures (e.g., National Healthcare Safety Network measures and Centers for Medicare & Medicaid Services [CMS] hospital-acquired conditions [HACs]) that were granted in order to allow hospitals to focus on the care of patients during this unprecedented time, Vizient evaluated national trends for select hospital-acquired conditions through the use of ICD-10 code-based definitions utilizing the Vizient Clinical Data Base/Resource Manager (CDB/RM).³ The CDB/RM is an analytic platform for performance improvement populated by hundreds of health systems and community hospitals nationwide, including nearly all academic medical centers. It

includes comparative benchmarks such as demographic, mortality, length of stay, complication rates, readmission rates, diagnosis, procedure, resource utilization and other information. The 4 HACs profiled include catheter-associated urinary tract infections (CAUTI), falls and trauma, stage III and IV pressure injuries, as well as central line-associated bloodstream infections (CLABSI), which include both CLABSIs and local infections of the catheter site; the incidence of these HACs are reported as number of cases with a coded event per 10,000 adult discharges.

In cases without COVID-19, a peak in performance across all of these HACs, except falls and trauma, was seen in April 2020; this initial spike may be a result of a decrease in less acute cases (e.g., elective surgeries) seen at the onset of the COVID-19 pandemic (*Figure 1*), and thus in overall volumes. However, as overall volumes began to return to the pre-COVID baseline, a steady increase in these HAC rates per

KEY POINTS

- Consequences of pandemic-related disruptions on nurse sensitive indicator performance are discussed.
- Nurse executives' perspective is given on hospital-acquired conditions during the pandemic.
- Advice for future disruptions includes guarding against drift from proven prevention strategies.

10,000 adult discharges continued; this raises many questions, including the following: can this potentially be a result of the increase in demand on existing resources to care for baseline patient volumes, a subset of which have COVID-19 and that may have increased needs? In addition, the data indicate an overall increase in the case mix index of hospitalized patients, which may contribute to higher rates, and this may be a result of less acute cases seeking other sites of care.

In cases with COVID-19, we see a peak in June of 2020, with HAC rates per 10,000 adult discharges decreasing over time (Figure 2); this may be a result of increased clinician experience and earlier recognition, leading to fewer cases with COVID-19 being hospitalized and with lower acuity since the onset of the pandemic. These results, coupled with the subsiding of the second wave of the pandemic, caused CNOs to begin to assess the impact of COVID-19 on nursing quality. Using the NSI results, many looked at their own organization's current state and then began contacting colleagues in other organizations to compare notes.

The Vizient Academic Medical Center (AMC) CNO Network, composed of 195 CNOs from across the nation, has always relied on its membership to compare, discuss, and exchange leading-edge strategies, innovations, policies, and practice changes to maximize care delivery. The AMC CNO Network utilizes a ListServ to leverage real-time communication, pose questions, and seek solutions for aligned opportunities. The unprecedented nature of the COVID-19 pandemic made the need for real-time solutions to novel clinical issues urgent.

Quality of care delivery and the negative impact of COVID-19 on NSI have been addressed and described in the literature where an individual organization recounted their own experience and addressed NSI performance along with the resultant practice changes.¹ This article shares the national CNO perspective of the impact of COVID-19 on 4 NSIs: CLABSI, CAUTI, hospital-acquired pressure injuries (HAPIs), and patient falls. Additionally, this article outlines strategies implemented and lessons learned when addressing nurse-sensitive indicators through the COVID-19 pandemic.

STARTING THE CONVERSATION

In January of 2021, an inquiry about NSI (Figure 3) was posted on the Vizient AMC CNO Network ListServ.

Twenty-one CNOs responded with overwhelming consistency; 20 of the 21 executives reported some negative impact to 1 or more of the 4 NSIs throughout the waves of the pandemic in both COVID and non-COVID patient populations. Multiple CNOs expressed concern that the decline in performance could impact their ability to achieve or maintain ANCC Magnet® designation or redesignation.

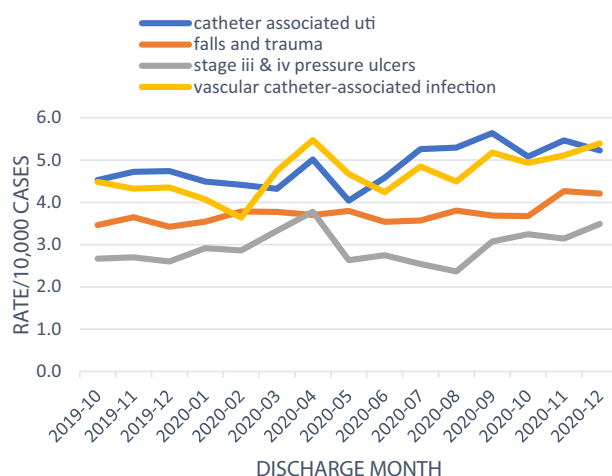


Figure 1. HAC Performance: Cases Without COVID-19.

The timeframe: October 2019 to December 2020; ages 18+ years, N = 599 hospitals. Excludes any diagnosis U07.1 that became effective on April 1, 2020. Source: Vizient Clinical Data Base/Resource Manager.

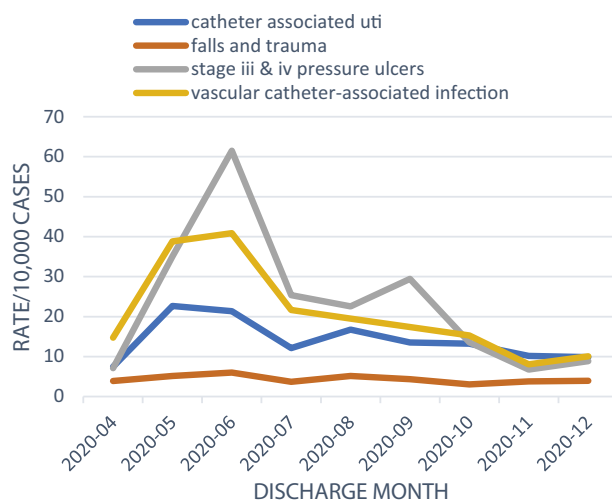


Figure 2. HAC Performance: Cases With COVID-19.

The timeframe: October 2019 to December 2020; ages 18+ years, N = 599 hospitals. Includes any diagnosis U07.1 that became effective on April 1, 2020. Source: Vizient Clinical Data Base/Resource Manager.

The sentiment of the AMC CNOs was supported by Stifter and colleagues,¹ who reported the negative impact of COVID-19 on NSI in their academic medical center in the Midwest. The trends of hospital-acquired conditions further supported these reports throughout the pandemic (Figures 1 and 2).

DIVING DEEPER: THE NSI SURVEY

The consistency and volume of CNO ListServ responses piqued the interest of 2 AMC CNOs who developed a broader NSI survey intended to increase

| |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Have you seen a decline in your performance on nursing sensitive indicators given the impact of organizational challenges associated with the COVID demand? |
| If you have seen a decline, is that specific to your COVID population or widespread? |
| If a decline, which metrics have been the most challenging in terms of maintaining performance? |

Figure 3. NSI Inquiry.

the AMC CNO Network member's understanding of the impact of COVID-19 on NSI at a national level. Through a partnership with the Vizient Network leader, the survey was modified to an electronic format for ease of distribution and response. To understand the impact of COVID-19 outside of the AMC, the electronic survey was distributed to all CNOs participating in Vizient nurse executives networks.

The 49-question electronic survey was a combination of multiple choice and open-ended questions. It included hospital demographics, an inquiry regarding turnover and staffing, and CAUTI, CLABSI, HAPI, and falls outcome indicator performance. Also, survey questions regarding process changes in NSI surveillance through COVID were included. The electronic survey was distributed to 487 CNOs and garnered 127 responses (26%), with 51 surveys (11%) completed in their entirety. For the purposes of this work, only complete responses were included. The responses below represent 51 CNOs, from 20 academic medical centers, 18 community hospitals, and 13 health systems.

FINDINGS

The data are presented in 3 key sections to evaluate changes to the following throughout the pandemic: staffing, NSI performance, and NSI surveillance practices (*Tables 1, 2, and 3*).

Directionally, the results of this survey revealed several factors regarding staffing that the majority of respondents have experienced through the pandemic: one, an increase in nurse turnover; two, the use of alternative nurse-to-patient ratios; three, the deployment of nonacute nurses to the acute care setting; and four, the lack of nursing support staff. Each of these factors alone disrupt standard clinical processes, nursing practice, and standards of care. Any combination of these increases the complexity of meeting those standards.

Similarly, a comparison of NSI performance January–March of 2020 to October–December of 2020 showed similarities in directional performance of these 51 organizations. Of note, there was a worsening in most organizations' performance in each of these 4 indicators, with a more significant impact in both CLABSI and HAPI. The strategies to address the

Table 1. Staffing

| Survey Question | Increased (Worsened) | Decreased (Improved) | No Change |
|------------------------------------------------------------------------------------------------|----------------------|----------------------|-----------|
| Have you seen a change in your RN turnover through the pandemic? | 70.6% | 5.9% | 23.5% |
| | Yes | No | |
| Have you used alternative nurse-to-patient ratios at any point during the pandemic? | 86.3% | 13.7% | |
| During the pandemic, have you deployed nonacute nurses to the acute care setting? | 72.5% | 27.5% | |
| Did your hospital experience a shortage of nursing support staff during the COVID-19 pandemic? | 92.2% | 7.8% | |

Table 2. NSI Performance

| Survey Question | Increased (Worsened) | Decreased (Improved) | No Change |
|----------------------------------------------------------------------------------|----------------------|----------------------|-----------|
| <i>The rate of CAUTI Jan–Mar 2020 compared to Oct–Dec 2020</i> | 45.1% | 13.7% | 41.2% |
| <i>The rate of CLABSI Jan–Mar 2020 compared to Oct–Dec 2020</i> | 62.7% | 7.8% | 29.4% |
| <i>The rate of falls with injury Jan–Mar 2020 compared to Oct–Dec 2020</i> | 54.9% | 11.8% | 33.3% |
| <i>The rate of HAPI stage II and above Jan–Mar 2020 compared to Oct–Dec 2020</i> | 72.5% | 7.8% | 19.6% |

Table 3. NSI Surveillance

| Survey Question | Yes | No |
|-------------------------------------------------------------------------------------------------|-------|-------|
| <i>During the pandemic, have you continued your NSI surveillance per your standard process?</i> | 80.4% | 19.6% |
| <i>Did you pause your NSI surveillance process through COVID?</i> | 23.5% | 76.5% |
| <i>For those that paused: Have you restarted your pre-COVID surveillance processes?</i> | 91.7% | 8.3% |
| <i>Have you changed your NSI surveillance processes based on what you have learned?</i> | 27.5% | 72.5% |

negative change in performance outlined below denote the unique needs of COVID-19 patients as contributors to these challenges.

Finally, the NSI survey addressed surveillance processes through the pandemic. A total of 80.4% of organizations noted a continuation of surveillance per standard processes. Of the 23.5% of organizations who paused reporting, they did so for between 60 days to 3 quarters, with 1 organization continuing to hold at the time that this survey was completed on February 5, 2021. Surveillance pauses were attributed to surveillance teams being pulled into staffing; HAPI surveillance was noted as suspended or put on hold more frequently due to the changes in CMS reporting requirements.⁴

For those that reported changing their NSI surveillance processes, modifications include increased audit frequency, making audits interdisciplinary, and changing audits to unit monitoring.

DATA COLLECTION AND FINDINGS

Findings from this NSI survey served as a starting point for solution-driven discussions with the CNOs. Those discussions were held, post-survey, in 4 short virtual meetings. These 4 sessions were similar in content and

formatted to elicit the strategies and tactics designed and used by participants to address NSI changes. Executives were asked to choose 1 session of the 4, allowing flexibility in time and date, to increase the opportunity for executive attendance. Two hundred seventy-two executives attended these sessions. During each call, the national Vizient CDB/RM HAC data and NSI CNO survey results were presented, and 30 minutes of each call were reserved for executive breakouts in which groups addressed 2 key questions:

- What solutions have you tried to address NSI?
- What were your lessons learned?

Each executive breakout had a facilitator who reported the key themes from each. The themes around solutions are outlined in [Table 4](#).

Interestingly, in evaluating the findings noted in [Table 4](#), the executives did not share specific strategies or tactics for CAUTI. Also, the importance of evidence-based practice and ensuring consistent delivery of standard care was a theme throughout. Finally, the vast number of strategies and tactics speaks to the persistence of nursing innovation and real-time solutions to combat the ever changing COVID-19 care challenges.

Table 4. Key Themes and Solutions

| Strategy | Goals | Tactics |
|-------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Sustaining nursing workforce</i> | Enhance basic care protocols to ensure safe, high quality care | <ul style="list-style-type: none"> - Standard practice and surveillance were lost through COVID—reinstated protocols to return to pre-COVID outcomes - Surveillance brought to the unit level - Surveillance rounds were made interdisciplinary - After action events with RCA were completed after each event, outlining themes and opportunities |
| <i>Sustaining nursing workforce</i> | Design just in time education to address COVID-19 challenges | <ul style="list-style-type: none"> - Implementation of assessment support for newer staff through a program called “4 eyes assessment” 2 nurses do admission assessment together, allowing mentoring of new staff - Initiated wound care education at the unit level and in real time - Held skills fair to broadly increase knowledge |
| <i>Sustaining nursing workforce</i> | Heightened staff awareness of patient injury | <ul style="list-style-type: none"> - Elevated the visibility of HAI through daily dashboards, goals, or adding to strategic plans - Initiated flagging high risk patients in the EHR |
| <i>Sustaining nursing workforce</i> | Repurpose staff to support patient care | <ul style="list-style-type: none"> - SWAT lift teams - Redeployed staff served as “runners” for supplies - Redeployed staff sent to floors to accomplish tasks to assist without assignments - Nursing students used as sitters so nursing assistants could remain on floor - Nonclinical care groups formed for feeding, bathing, and running errands |
| <i>Wound and skin care</i> | Prevent interruptions in skin integrity | <ul style="list-style-type: none"> - Instituted wound care nursing rounds for high risk patients - Developed a “pronation panel” in EHR with BPA for wound nurse consult who did daily prevalence an incidence - Wound consult became mandatory for all prone patients - Instituted preventative protection for skin breakdown for COVID patients, especially in prone patients - Changed methods for taping mouth guards and bridle devices, and removed facial hair when possible - LEAF Patient Monitoring System piloted for pressure ulcer monitoring that connects to EHR - Developed positioning kits and utilized new positioning products - HAPI huddles or “swarms” initiated 24 hours after injury (skin team, ICU, quality team) with root cause analysis - Recent research denotes in COVID-19 patients skin injury may be a manifestation of the disease and not a pressure injury.^{5,6} Have clear assessment guidelines in place to differentiate. |

(continued on next page)

Table 4. (continued)

| Strategy | Goals | Tactics |
|----------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HAC | Fall reduction strategies | <ul style="list-style-type: none"> - Instituted staffing models to support rapid intervention with high fall risk patients “Hot Zone Boss” - Increased video surveillance - Added “yellow” stockings and yellow alerts for high fall risk patients - To decrease patient anxiety and isolation linked to falls—one organization developed a “Compassionate Rounders” team to round on COVID patients and assist with calls and facetime opportunities with family |
| HAC | Reduce incidence of CLABSI | <ul style="list-style-type: none"> - Moved IV poles back into patient rooms, which increased site assessment and line care per protocol - Lifted IV tubing off of the floor |

BPA, best practice advisory; EHR, electronic health record; ICU, intensive care unit; RCA, root cause analysis; SWAT, supplemental work and transition.

Regardless of a pandemic, the data show us the adherence to the standards of care for the prevention of hospital-acquired injuries and conditions is paramount if we are to provide safe, high quality care.

Preparing the workforce with the right tools and protocols in real time will continue to be important as we potentially face new challenges/phases of the pandemic. A closer examination of staffing decisions made during surges may offer insight into the variations noted between the COVID-19 patients (*Figure 2*) and the non-COVID-19 patients (*Figure 1*). Additional study of staffing practices during the COVID-19 pandemic could inform nurse leaders about staffing considerations in times of disaster.

CONCLUSION

As the CNOs reflected on lessons learned, critical themes around the nursing workforce and workforce exhaustion emerged. Efforts to care for the most critical patients at hand resulted in the use of alternative staffing and patient care strategies throughout the COVID-19 pandemic. As outlined throughout this paper, these staffing strategies may be rife with unintended, negative patient care impacts. For example, the redeployment of surveillance nurses to acute care assignments during the pandemic disrupted the routine monitoring of NSIs without an alternative solution. Moreover, nurses unfamiliar with the environments and the general nature of care delivery created increased opportunities for deviation from standard practice, thereby increasing the possibility of missed or disrupted care, along with increased stress in the nursing workforce.⁷ Additionally, CNOs noted signs of nurse fatigue and burnout as the COVID-19 pandemic has worn on, creating risk for staff and patients.⁷⁻⁹ To ensure success in future disruptions, the CNO must

consider a flexible workforce model for the future. Enforcing care bundles and maintaining standard practice, even through disruption, are key to ensuring that patient outcomes remain stable. COVID-19 has been the most significant disruptor in healthcare, but it will not be the last.

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